

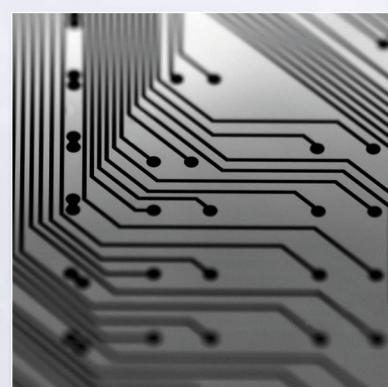
HEIDELBERG
INSTRUMENTS



Large Area VPG⁺

The VPG⁺ with a big PLUS in
exposure speed - our fastest photo-
mask production tool of all times!

NEW



Photomask with electronic circuits

Large Area Volume Pattern Generator

The VPG⁺ – the Large Area Volume Pattern Generator:

Introduced in 2007 and based on a patented vast exposure process parallelization, the VPG line of large area lithography systems quickly became the industry standard. For ten years now, VPG systems have proven themselves to be the ideal solution for the high-volume production of demanding photomasks – particularly in the fields of electronic packaging, color filters, light emitting diodes, and touch panels. All VPG systems share the same powerful technology – and in total, they currently lay claim to an installation base of more than 50 worldwide.

With advancing technological developments, the large area VPG too has continuously been improved and its performance increased to finally evolve into the VPG⁺: The VPG, like its users, always stands at the cutting edge of technology.

Even higher exposure speed: Our VPG⁺ series now features an even significantly faster high-speed spatial light modulator, custom-made for Heidelberg Instruments and therefore exclusive to the VPG⁺. The entire exposure engine operates at a higher rate than ever before and the data path has been vastly enhanced. At the new maximum speed, an exposure can be completed up to three times as fast as with the original VPG: this makes the VPG⁺ the fastest tool for mask-writing in this market-segment.

Features and options: The VPG⁺ large area systems are equipped with a semi or fully automatic feeder for substrate loading, a high power pulsed UV laser source with a wavelength of 355 nm, and an air-bearing stage. Stages of varying dimensions are available to meet a wide range of requirements: VPG⁺ systems can be configured to accommodate substrate sizes of up to 800 mm (VPG⁺ 800), 1100 mm (VPG⁺ 1100), or 1400 mm (VPG⁺ 1400) respectively. An automatic calibration tool enables superb registration and positioning of written structures; the small write grid ensures excellent edge roughness and stripe butting. The flexible system configuration also allows for the addition of an automated write mode exchanger unit. All industrial data formats are of course supported; and VPG⁺ systems offer mura optimization functions ensuring good mura conditions and therefore excellent CD uniformity and resolution.

Environmental control: All VPG⁺ systems are housed in solid, state-of-the-art flow boxes: the VPG⁺ 800 in particular now boasts a cleverly redesigned chamber with a footprint

considerably smaller than before. The closed-loop environmental chamber complies with the stringent requirements associated with advanced photomask technology. The system continuously monitors pressure, humidity, and temperature. Deviations are instantly compensated to ensure ultimate stability of the position measurement.

A system apart – the VPG⁺ 1400: While all VPG⁺ systems large and small share the same powerful technology at their core, each of them retains their own characteristics, specific applications and areas of use. The VPG⁺ 1400 is our largest system and particularly aimed at applications in the display industry: FPD applications like TFT-arrays and color filters, ITO and so on. On the outside, the VPG⁺ 1400 features an extremely powerful, impressive environmental chamber; on the inside, a differential interferometer with a resolution down to 1.2 nm. In addition, these systems are equipped with advanced mura correction capabilities such as panel pitch optimization.

Key Features and Options

NEW Ultra-high-speed exposure engine

Real time auto focus system

High power DPSS laser with 355 nm

Automatic write mode exchanger

Camera system for metrology and alignment

Closed-loop climate chamber

Automatic substrate loading system

Stage map correction

Mura correction

Edge detector system

Multiple data input formats

User programmable interface

SPECIFICATIONS

WRITE MODE	I	II	III	IV
Minimum structure size [µm]	0.75	1	2	4
Address grid [nm]	12.5	25	50	100
Edge roughness [3σ, nm]	40	50	70	150
CD uniformity [3σ, nm]	65	75	110	300
Stitching [3σ, nm]	60	70	100	250
Registration [3σ, nm]	200	200	200	200
Write speed [mm ² /minute]	1125	4125	8250	16500

Please note: Specifications depend on individual process conditions and may vary according to equipment configurations. Write speed depends on exposure area. Design and specifications are subject to change without prior notice.